

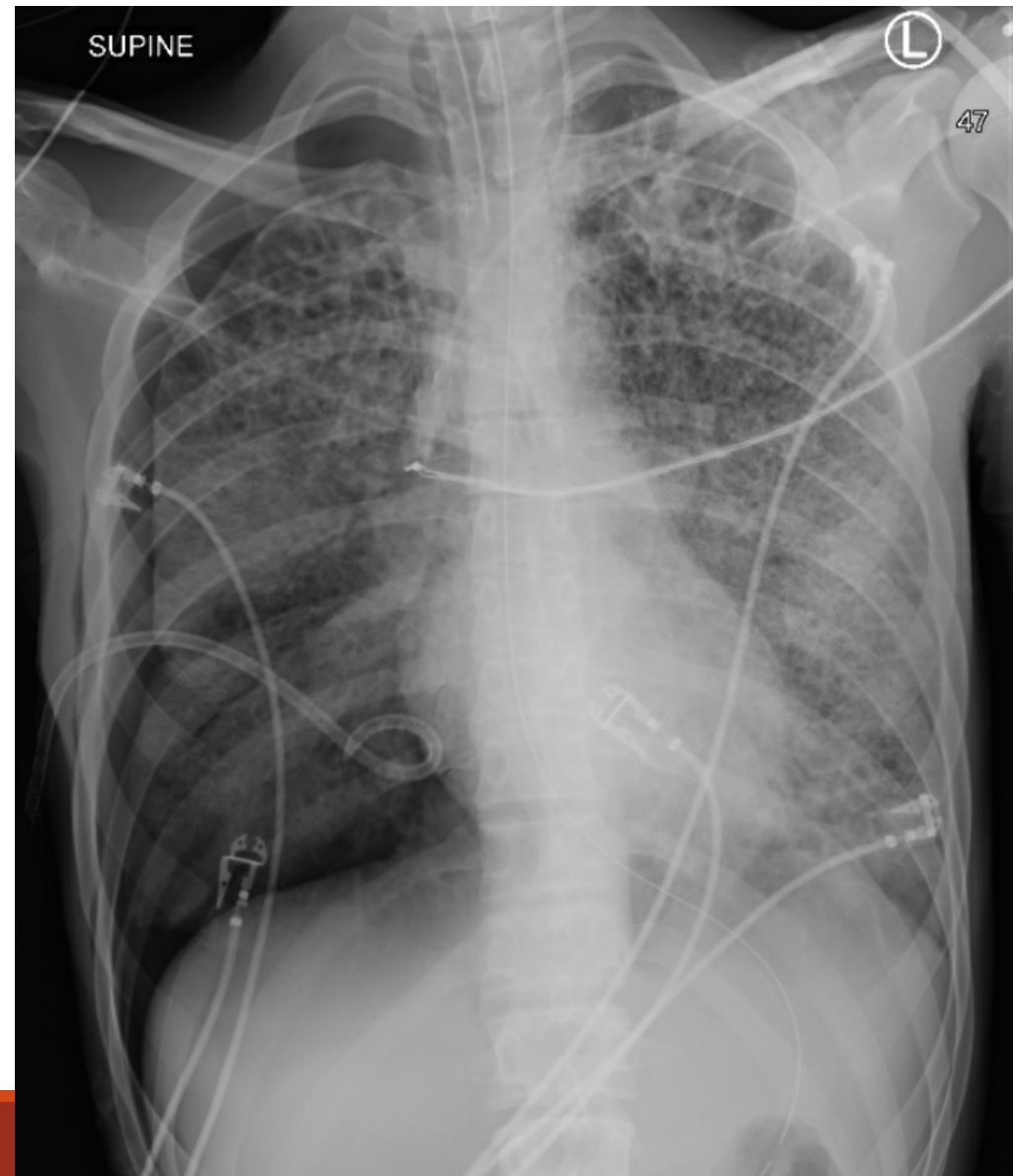
COVID-19 in an Immunosuppressed Patient

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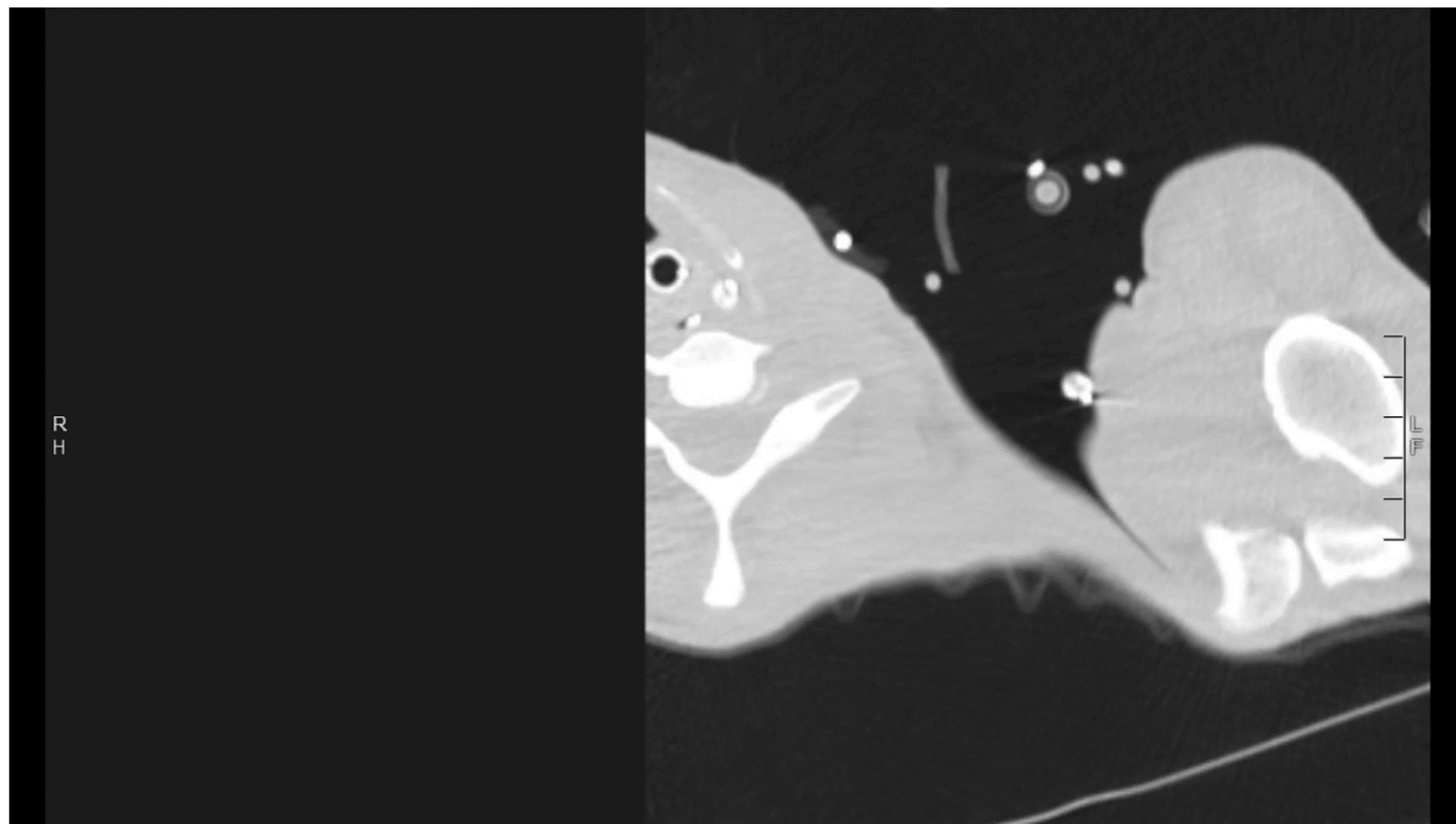
Presentation

27 year old male with PMHx of tobacco abuse presented with an 2 month history of progressive dyspnea with acute worsening 2 days prior to presentation

- He experienced an unintentional 100 lb weight loss over the preceding 6 months
- Severe hypoxia/increased work of breathing with subsequent intubation, abx started
- CXR performed and right pigtail catheter placed for large pneumothorax

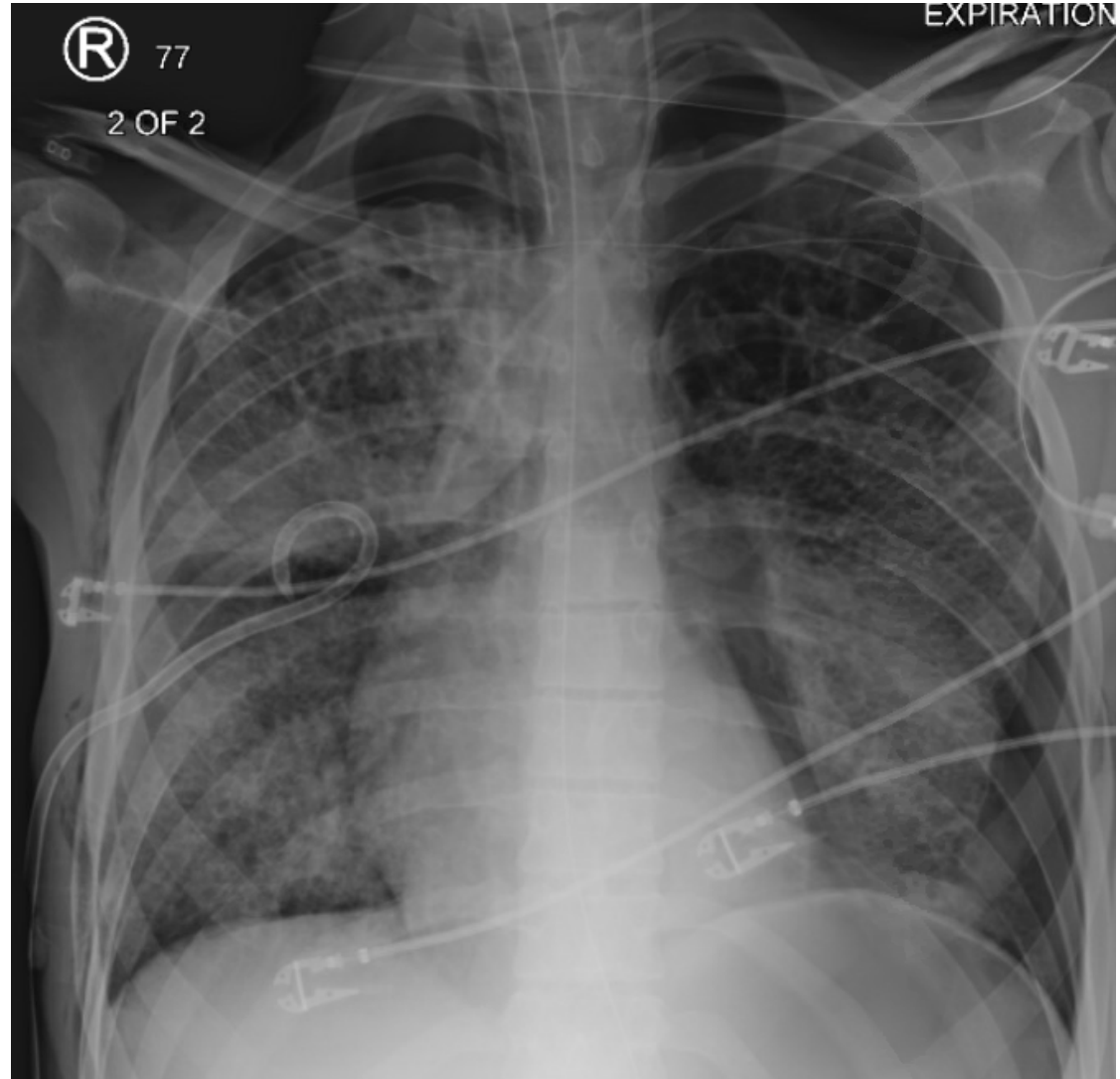


CT Chest



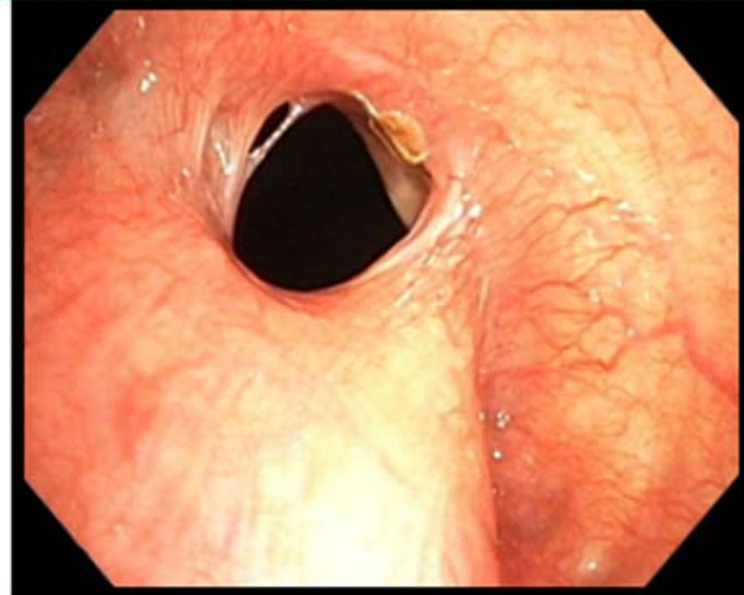
Hospital Course (cont.)

- Testing: COVID 19+ and HIV+ with CD4 of 32, Remdesivir started
- Underwent diagnostic bronchoscopy and sample was + PCP/PJP antigen, Bactrim/steroids
- Worsening hypotension and hypoxia noted with continued air leak on the right concerning for bronchopleural fistula (BPF)
- Repeat CXR demonstrated new pneumothorax on the left and unresolved pneumothorax on the right
- 2 left pigtail catheters placed



What are important ventilator considerations in the setting of bronchopleural fistula?

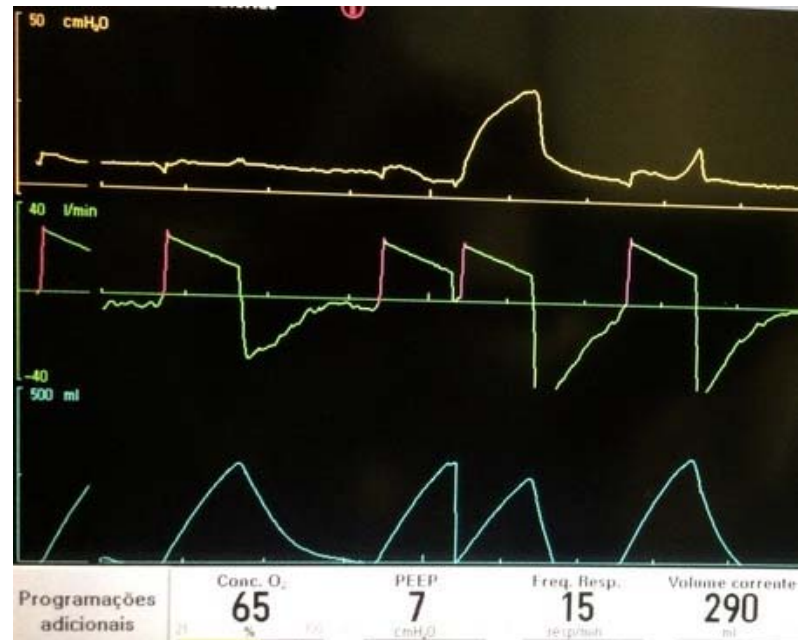
- A. Can cause of double triggering
- B. Minimize peak airway pressures
- C. Minimize PEEP
- D. Minimize CT suction pressure
- E. All of the above



Bronchoscopic view of a large bronchopleural fistula in the left main stem bronchus in a patient following pneumonectomy.

Important ventilator considerations in the setting of bronchopleural fistula?

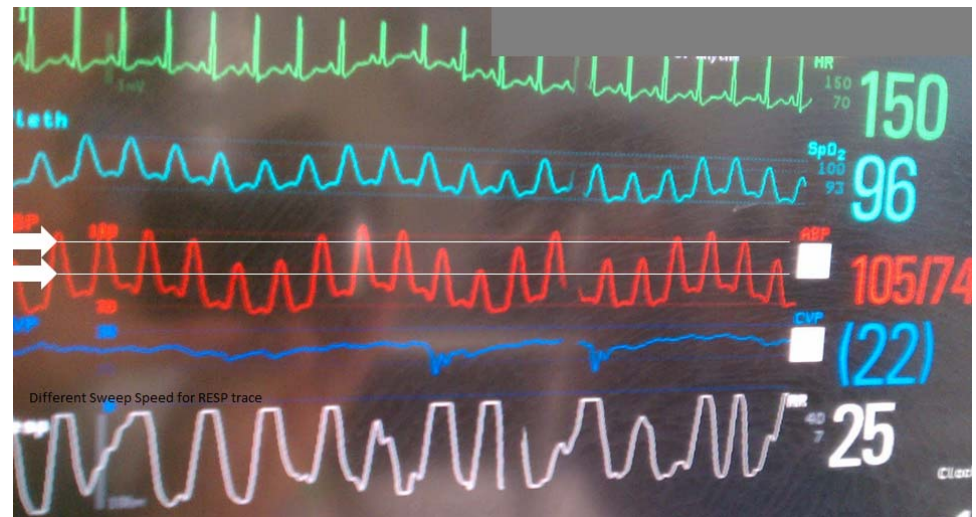
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Double Triggering Volume Control
<https://xlung.net/en/quizzes/54>

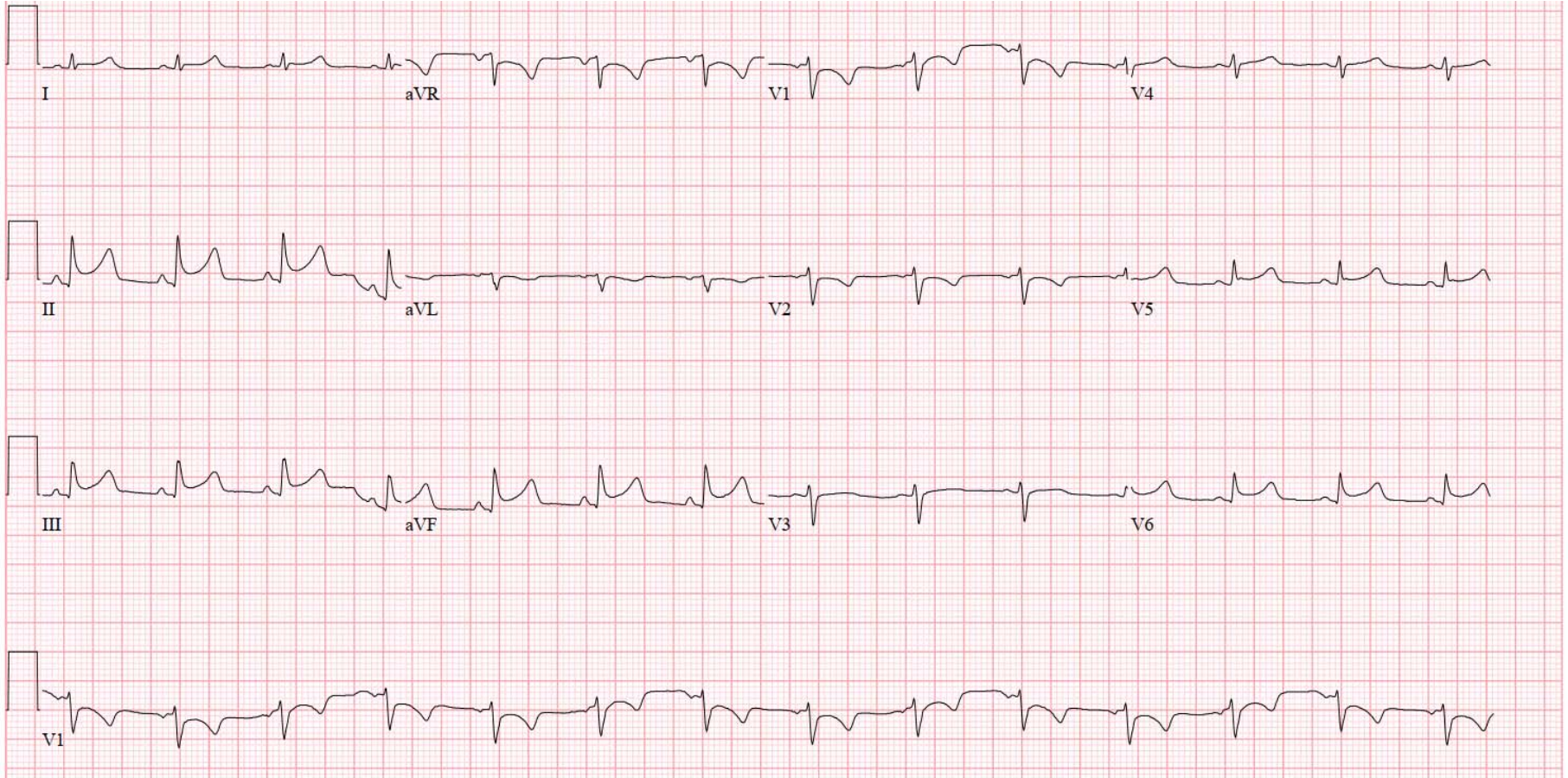
Hospital Course (cont.)

- Patient became more hypotensive and required high dose vasopressors
- The following arterial waveform was noted on the monitor
- An EKG was ordered



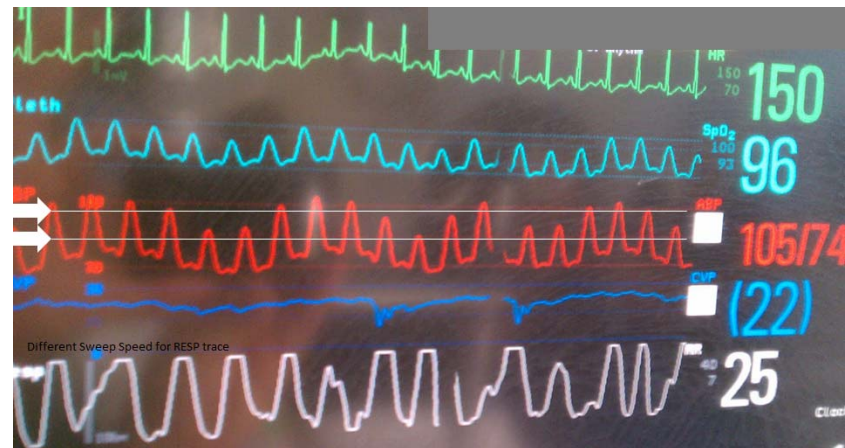
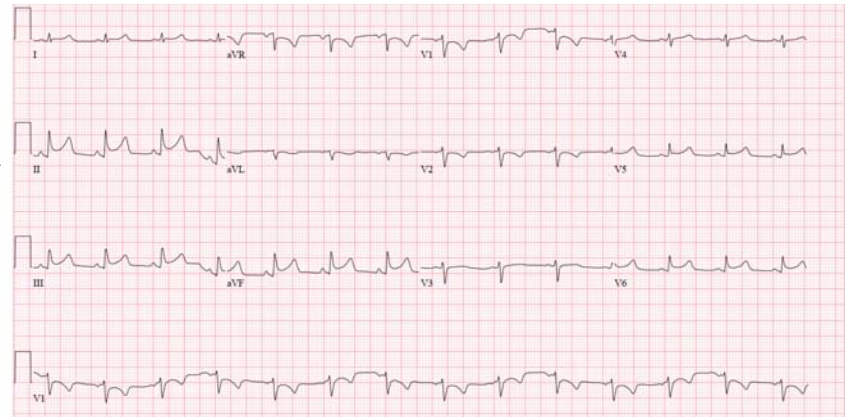
Source: <http://www.pedicardiology.net/>

EKG



What is your next step in management?

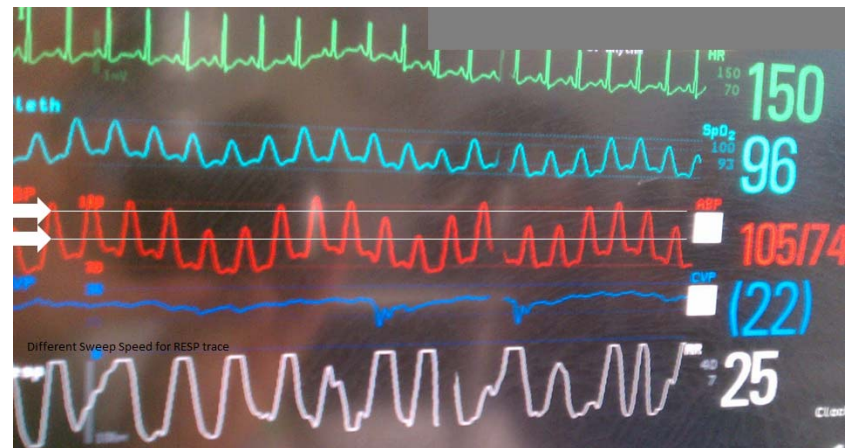
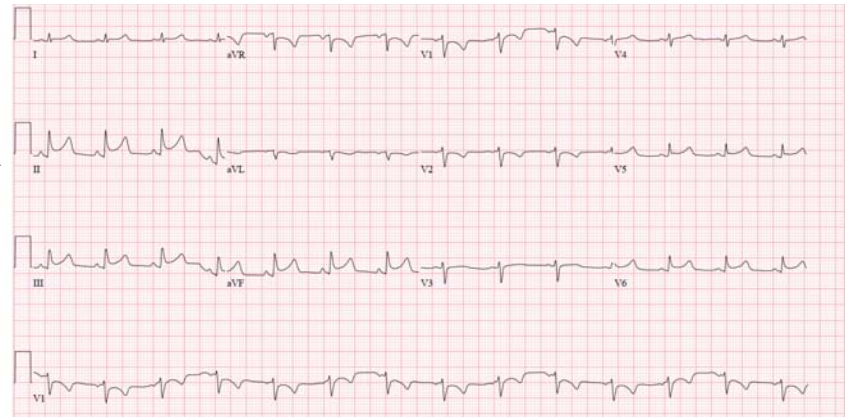
- A. Activate the cardiac cath lab
- B. Start antiplatelets, statin, anticoagulation
- C. Echocardiogram
- D. Volume administration
- E. Push thrombolytics



Source: <http://www.pedicardiology.net/>

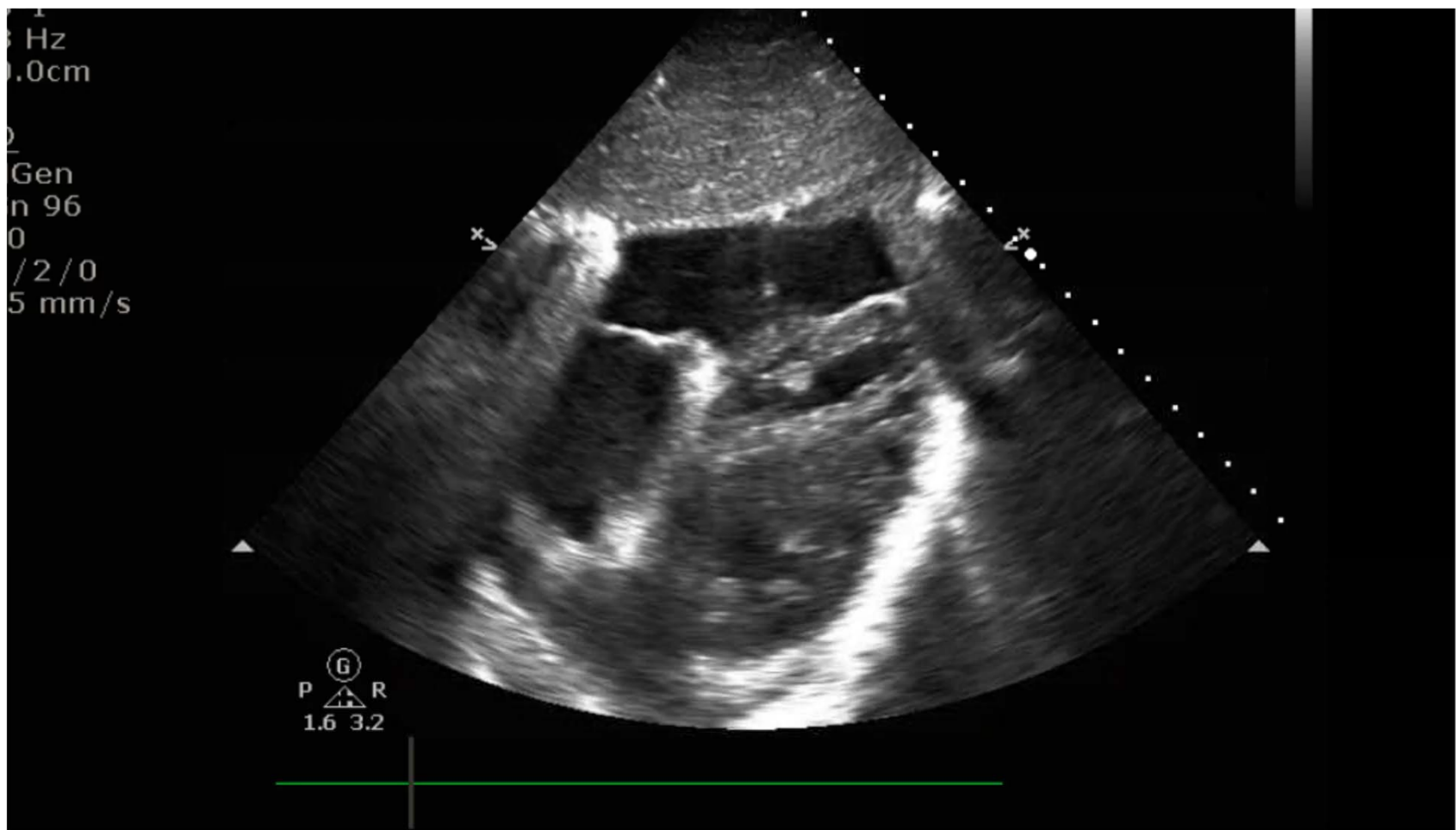
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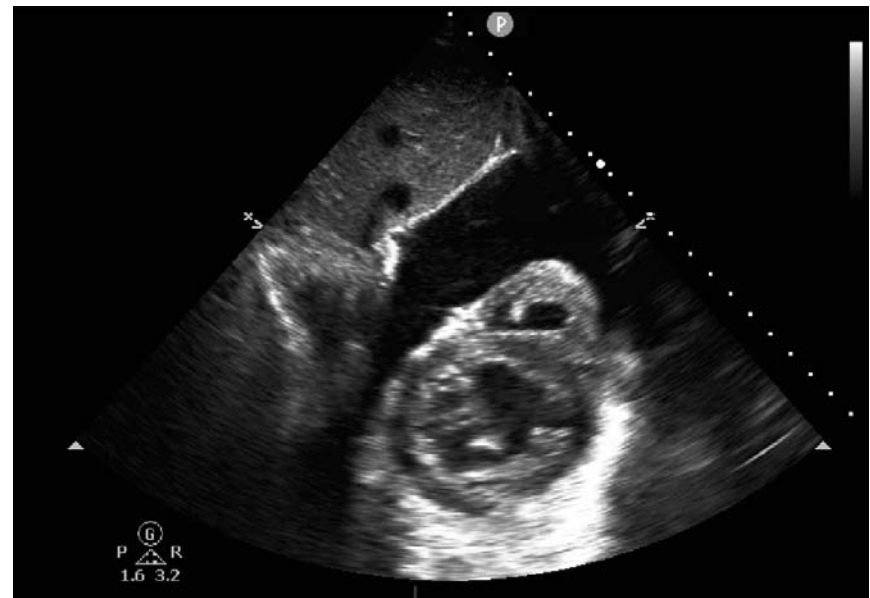
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Echo



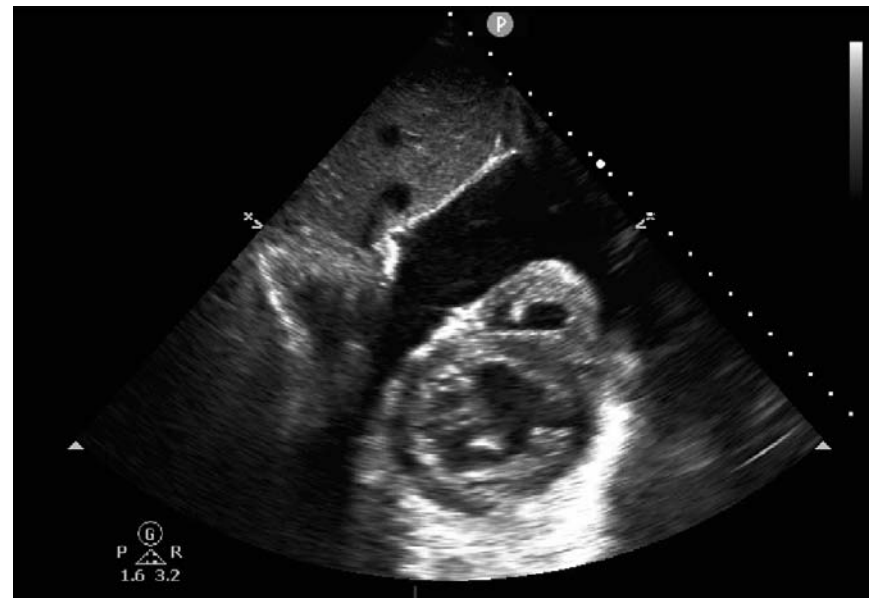
What are echocardiographic signs consistent with tamponade physiology?

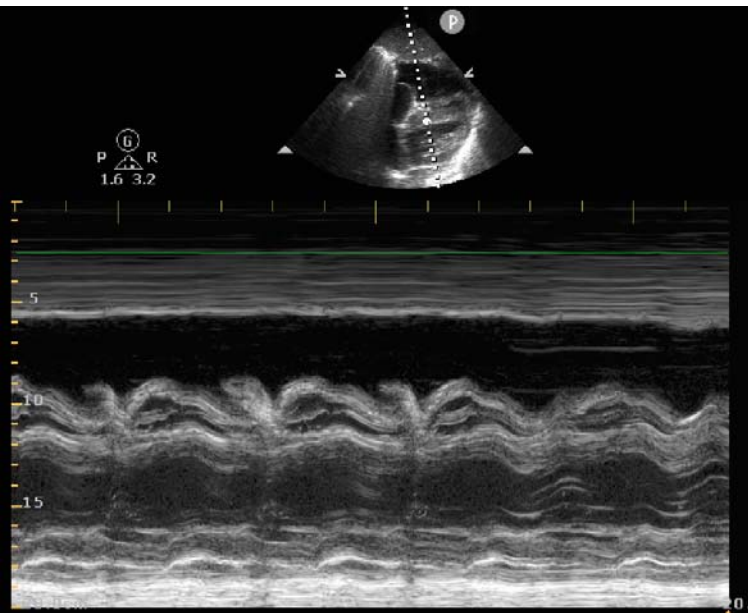
- A. RA/RV diastolic collapse
- B. Enlarged IVC
- C. Aortic valve peak velocity respiratory variation
- D. AV inflow peak velocity respiratory variation
- E. All of the above



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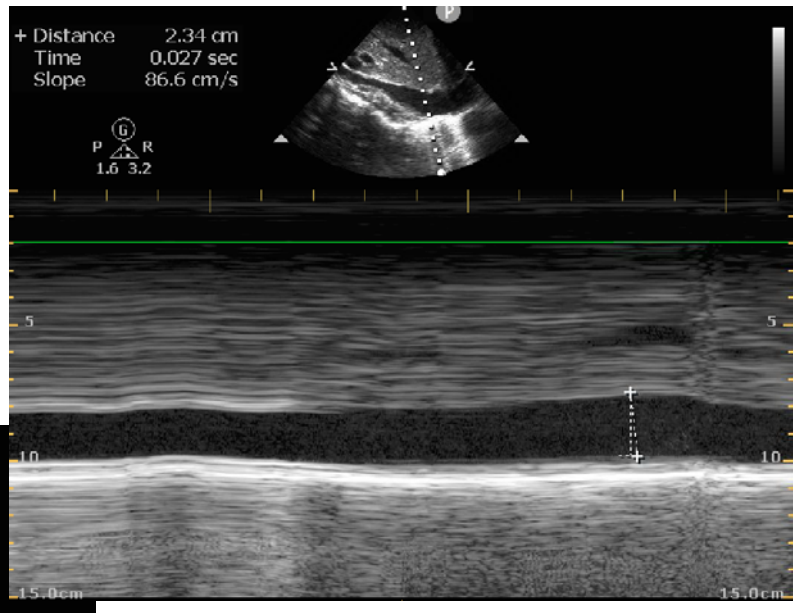




RA and RV diastolic collapse



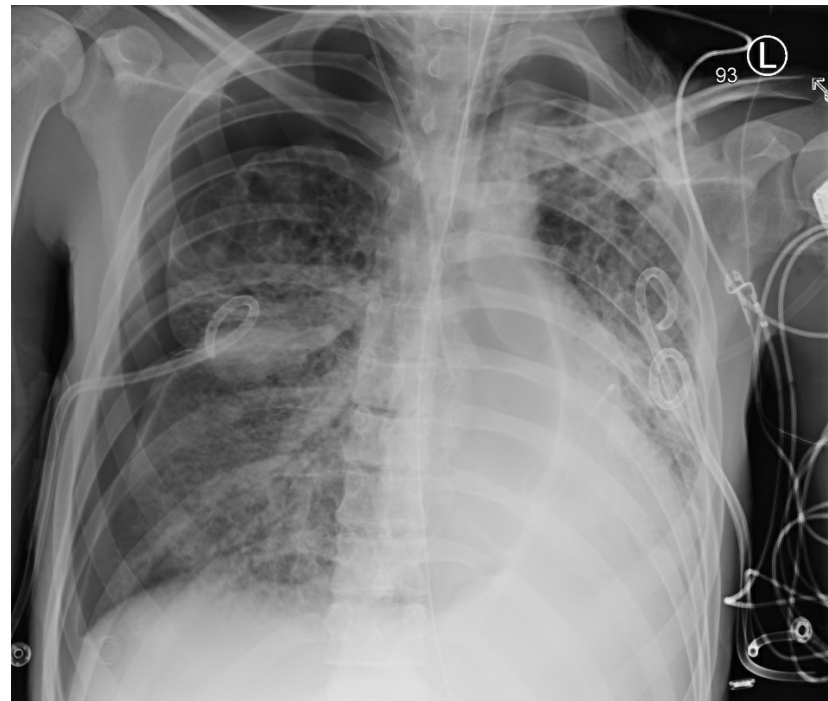
AV valve inflow/aortic valve outflow respiratory variation



IVC dilation

Hospital Course (cont.)

- Percardiocentesis performed
- Once more with worsening hypoxia and hypotension
- Continued large air leak through chest tubes
- CXR showed large right pneumothorax with mediastinal shift



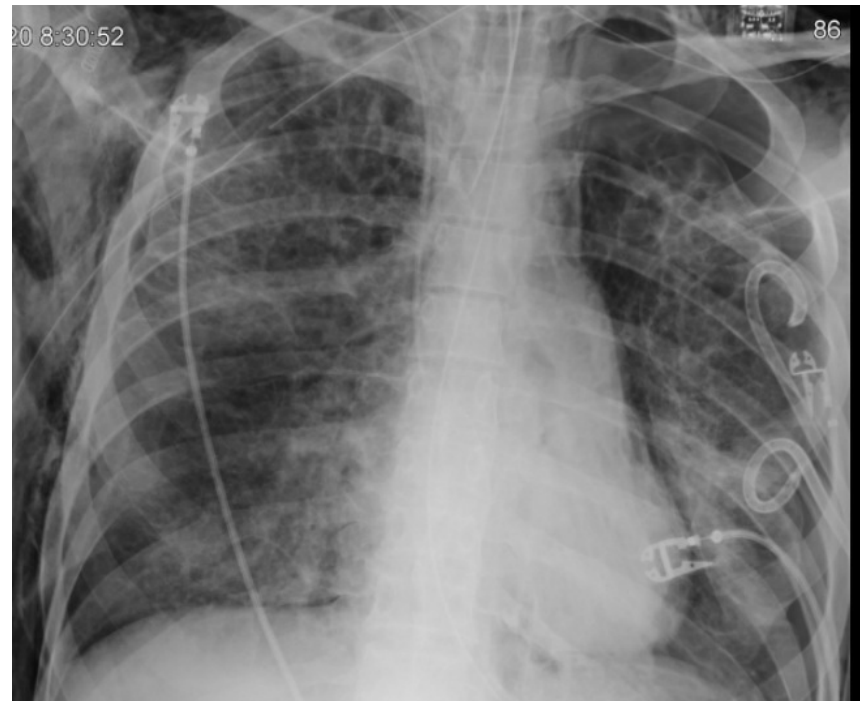
Hospital Course (cont.)

- Right 28 Fr surgical chest tube was placed
- Immediate significant desaturations
- Massive air leak on the right, worsening air leak on vent
- Air leak on left CTs no longer present
- What do you do?
- What happened?



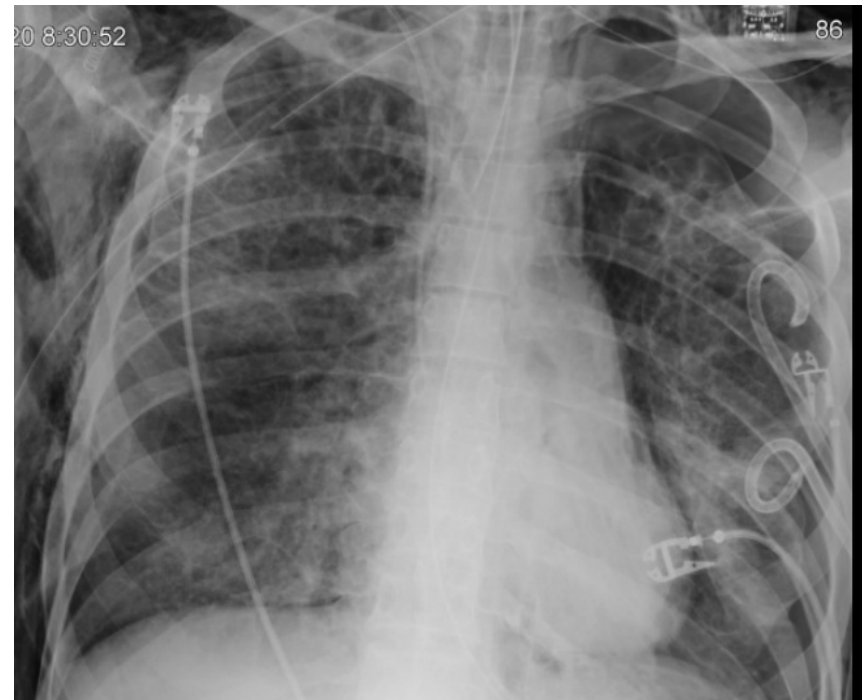
What to do?

- A. Needle decompression on the left
- B. Increase PEEP
- C. Administer volume
- D. Transiently clamp surgical chest tube



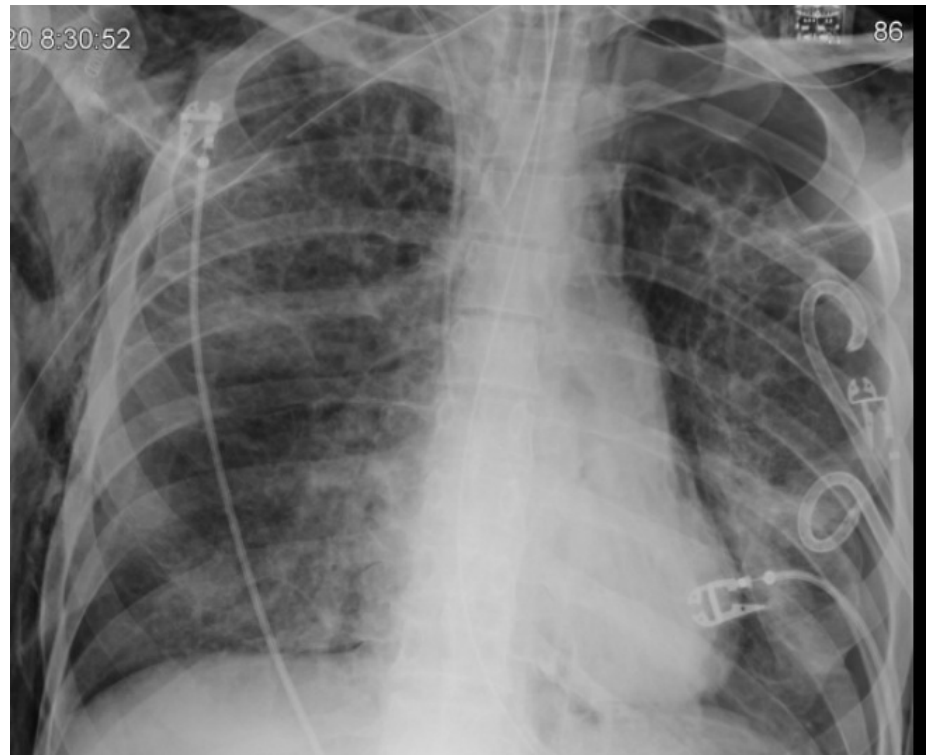
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What Happened?

- By placing large chest tube on the right, we dramatically decreased resistance of egress through bronchopleural fistula (BPF)
- Preferentially ventilated the right lung (BPF) with less flow to the left
- Less flow to the left lung = decreased flow through BPF on left, no air leak through left CTs, less overall effective alveolar ventilation



Hospital Course (cont.)

- Left 28 Fr surgical chest tube placed
- Bilateral lung re-expansion
- Decrease in air leak over several days
- Decreased oxygen/vent requirements
- Successfully extubated
- Air leak decreased dramatically post-extubation and resolved with no residual pneumothorax after 3 days

